

A Work Project, presented as part of the requirements for the Award of an International Master Degree in Finance from the NOVA School of Business and Economics

**POTENTIAL LBO OF CTS CORP: BUILDING AN INVESTMENT THESIS**

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A Project carried out on the International Master in Finance Program, under the supervision of:

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**Abstract:**

The following paper focuses on the development of an investment thesis for the potential LBO transaction of CTS Corporation, a US-based electronic component manufacturer that serves OEMs in five different end markets. It develops the company overview and market overview, building up to a detailed entry rationale and investment thesis that simulate a section of a real-life Investment Committee Paper.

**Keywords:**

Private Equity, Investment Thesis, LBO, Value Creation

**Disclaimer:**

This project was developed in a group and constitutes the first section of the entire thesis. It was done with an academic purpose, using publicly available information and information made available directly by the company. The second part of the work was delivered under the name: “Potential LBO of CTS Corp: Structuring an LBO Deal”

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# CTS CORPORATION

## Individual Report: Building an Investment Thesis

Prepared by:

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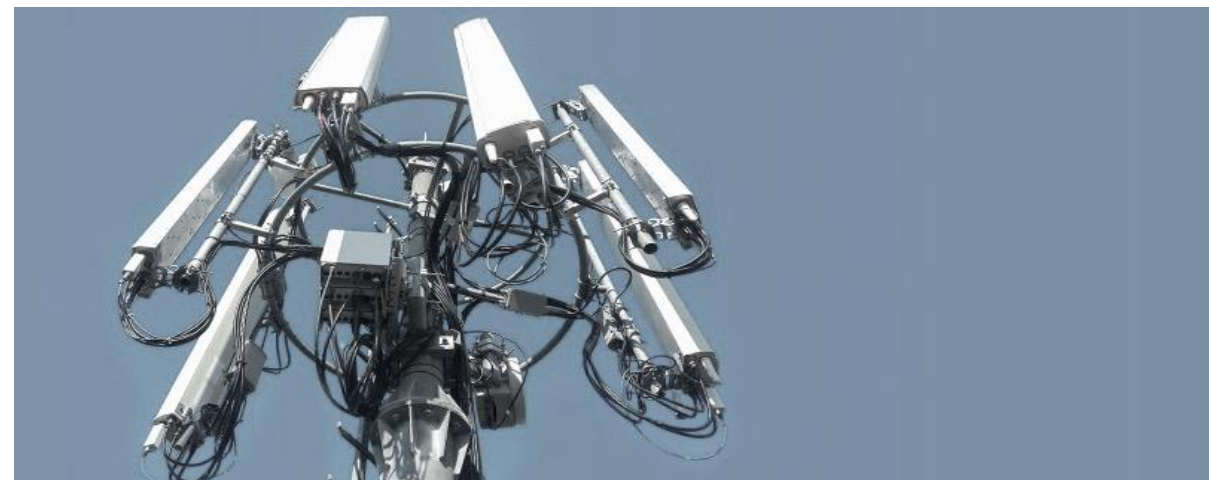
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CTS is an interesting investment opportunity that yields a 3.1x MM and 26% IRR



Company overview

- CTS is a **Tier 2 supplier** of sensors, actuators and electronic components for the **(1) Transportation, (2) Industrial, (3) Medical, (4) Aerospace & Defense, and (4) Telecom & IT** end-markets, in the semiconductor industry
- The company develops and manufactures **standard and custom-engineered components** for their clients, heavily relying on R&D and strong customer relationships
- Its main clients are **Original Equipment Manufacturers**, with < 10% of sales tied to distributors
- CTS is **headquartered in the U.S.** and has a global sales footprint

Key financials (\$m)	FY19	FY20	FY21	FY22	FY23	FY24
Organic Sales	476	516	563	637	708	774
% growth	1%	8%	9%	13%	11%	9%
Organic G. Profit	163	186	205	235	264	293
% margin	34%	36%	36%	37%	37%	38%
Organic EBITDA	92	101	115	135	155	177
% margin	19%	20%	20%	21%	22%	23%
Inorganic EBITDA	-	-	30	49	82	94
Total EBITDA	92	101	144	184	237	271
% margin	19%	20%	18%	18%	18%	19%

Industry overview

- The sensors, actuators and electronic components industry is characterized by high fragmentation dominated by many large and diversified players
- The combined global industry is expected to experience strong growth over the investment period and is predicted to reach a **market volume of approximately \$732bn by 2024**
- Strongest growth is expected from the **sensors market** with an expected **CAGR from 2019 until 2024 of 9.5%**
- The strong growth is fueled by several trends in the underlying end markets such as the rise in demand of wearable devices in the biomedical sector, fast growth in Internet of Things (IoT) applications and emerging application of radar in remote sensing

Entry rationale

1 Robust fundamentals

- Healthy cash flow generation, above-average profit margins, leverageable balance sheet, robust IP position

2 Skilled talent pool

- Leadership team with an outstanding track record, and experienced team of sales engineers' in the ground

3 Acquisition history

- Historically, 40-60% of FCF has been deployed for acquisitions, most of which have been value-adding and synergistic

4 Optimistic industry trends

- Actionable mega trends, significant growth projections, and increased demand for strategic products in key sectors

Investment thesis

Returns Breakdown

Component	Value
Organic Revenue Growth	0.98x
Organic Operating Leverage	0.48x
Inorganic EBITDA	1.60x
Cash generation	(0.11x)
Total value creation	2.95x

- The investment thesis is built on organic growth, internal restructuring and a strongly executed acquisition strategy
- The organization is restructured, and targets are selected in order to benefit from current growth trends in the global sensors market
- A total value creation of 2.95x is expected to be achieved during the investment period

Exit and returns

Sources	in \$m	EBITDA x	Uses	in \$m	% total
Debt	360.0	3.9x	EV	943.8	95%
Equity	631.4	6.9x	Fees	47.6	5%

- Valued at **10.3x EV/EBITDA** both at entry and exit, CTS yields a total return of **3.1x MM** over the 5-year investment period
  - Fund's returns: 3.1x MM and a 26% IRR
  - Management proceeds: \$223.9m
- Exit is likely to be a trade sale, due to industry consolidation trends

Category	Value
EV	2,793
Senior TB	463
ACF	74
Other Debt	16
Cash	146
Subloan	893
Ords	1,493

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# CTS Corp is a leading manufacturer of sensors, actuators, and electronic components



About CTS Corp

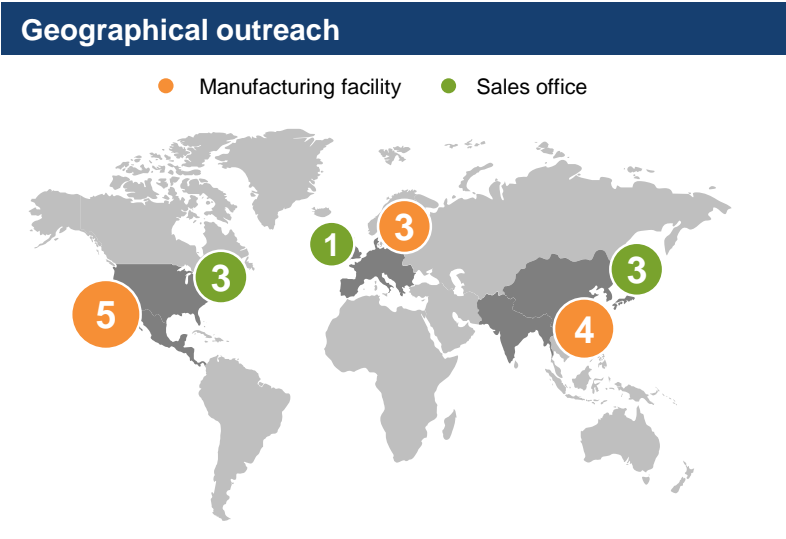
- CTS Corp (NYSE: CTS) is a **global designer and manufacturer** of sensors, actuators and electronic components
- Founded in 1896 and **headquartered in Lisle, Illinois, USA**, the company currently has 3,230 employees
- CTS sells mainly to **Original Equipment Manufacturers** (or "OEMs") for the Transportation, Aerospace & Defense, Industrial, Medical, and Telecommunications & IT markets
- Only 10% of sales are tied to distribution** as the Company's focus is on custom-engineered products

Play to win

Responsive-ness

Simplicity

Solution-oriented



Product lines

Sense

Sense products detect environment changes and provide vital inputs to electronic systems

Controls, sensors, pedals, switches, piezoelectric sensing components, transducers

Connect

Connect products allow systems to work in synchronization with other systems

EMI/RFI Filters, capacitors, resistors, frequency control resistors, RF filters

Move

Move products ensure required movements are effectively and accurately executed

Piezoelectric micro-actuators, rotary actuators

A history based on innovation

- Chicago Telephone Supply Company (later CTS) was established, focused on the niche **"rural telephones"** market
- CTS became the leading producer of telephone systems for rural areas

1896 - 1910

- CTS began reinventing products for use in the **emerging radio market**
- Evolution from manufacturer of finished products to **manufacturer of components**

1911-1922

- With WWII, CTS became an important supplier of remote telephones
- Together with MIT, CTS developed **potentiometers for radar units**, aiding the allies in air night strike missions

1923-1942

- Adapted to **evolving television market**, increasing component production and profits to new heights
- Post-war years brought opportunities in **medical sector**

1943-1950

- Official name change to CTS Corp
- Further innovation to fit the **developing computer market**
- Miniaturization of electronic products
- Listing in the NYSE** in 1962

1951-1963

- Opening of **Asian branches** to serve North American off-shore OEMs
- New environmental laws in the U.S. open the **transportation market** for CTS

1964-1971

- International facility expansion** in Europe, North America and Asia
- First wave of **mergers and acquisitions** to consolidate position

1980-1999

- Second wave of **acquisitions** to access key markets and drive growth In
- New CEO brings new strategy and **divestiture** of the **Electronics Manufacturing Services (EMS)** BU in 2013
- Introduction of **renewed identity and brand** in 2016

2000-2019

Transportation

Industrial

Medical

Aerospace & Defense

Telecom & IT

Sources: Company Annual Reports, Official Company Website, Investor Presentation 2019

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# CTS competes best with custom-engineered products and benefits from LT contracts



## Business and role in value chain

- CTS Corp. is a **Tier 2 (or “parts and components”) supplier** in the value chain of their customers, providing both custom-engineered and standardized parts for the assembly and manufacturing of diverse equipment
- **Custom-engineered products (90% of sales)** are developed in close relationship with the client and bear higher profitability margins
- **Client lists and relationships** are a crucial asset for CTS (c. 15% of total assets over last 8 years)

## CTS’ customers

- Most of CTS’ customers (>90% of sales) are **Original Equipment Manufacturers (OEMs)** - companies that produce parts and equipment to be marketed by another manufacturer. They also serve, on smaller scale, Tier 1 suppliers<sup>1</sup> (distributors)
- Despite having dozens of clients around the world, CTS’ revenues are concentrated in **15 Top Clients** (63.7% in 2018), with over half of this revenue coming from the **automotive industry**
- Customers expect and demand high **quality and technology, reliability, durability, on-time delivery, and a great service**

## Revenue model

- ~100% of revenues are derived from product sales to OEMs

Booked business

2018

\$1.87bn

2017

\$1.47bn

The sales to the remaining end-markets are a mix of **order-based purchases and short-term contracts**.

Multi-year contracts of c. **2-3 years, customized products**

More standard products are sold to these end-markets

## Key activities

- Research and development** as main sales driver: developing new products and alternative applications for existing ones
- Personalized and tailored sales process** for cash flow stability, capturing and retaining key customers
- Strong relationships management** with customers to ensure satisfaction, recurring revenues, and longer-term contracts
- Cost-efficiency across the firm** to offset the negative effects of the industry’s price erosion and rapid technological change

## Marketing & sales

Yearly revenue, %

Channel	Percentage
Sales Engineers	89%
IRMs	5%
IDs	6%

Sales are carried out in three types of channels:

- **Sales Engineers**, who service the largest customers with application-specific products, working closely with them in the design and development of these products
- **Independent Manufacturer Representatives (IMRs)**, who earn commissions from CTS
- **Independent Distributors (IDs)**, who buy to resell to customers

## Key competitive advantages

- First mover** in several products, making them reliable and trustworthy in the eyes of customers
- Skilled and proactive human talent**, in all levels of the hierarchy, especially salespeople, engineers, and leadership
- High-standard **custom-engineered products** for large transportation OEMs, generating high switching costs
- Sound technological IP position**, through a program of U.S. and non-U.S. patents and trademarks<sup>2</sup>

Growth drivers

CTS Corporation has historically derived its growth both **organically** and **inorganically**

1. **Organically**, the company grows by **capitalizing on emerging mega trends**: Its core innovative culture, portrayed in R&D and technology IP investments, has allowed them to be responsive and capture clients in new market segments
2. **Inorganically**, the firm has performed several strategic horizontal acquisitions, most of them accretive, to expand product reach, enhance technology portfolio, broaden geographic presence, and strengthen customer relationships

Main costs

- **COGS** represent around 75% of total costs
  - **Raw materials and components** are sourced from numerous suppliers, having alternative sources for uncommon products to mitigate shortage risk. Occasionally, large orders at higher prices are needed to compensate for variability of lead times
  - **Labor costs** are a large share of COGS, given that highly-skilled employees are needed to ensure required quality and reliability
- **R&D and SG&A** represented 19% of total costs in 2018

Notes: 1) See “Value Chain” on page 17, 2) As of 2018, license and royalty income was less than 1% of net sales

With three product lines serving five end markets, the firm is highly diversified



Transportation	Industrial	Medical	Aero & Defense	Telecom & IT
<div>64% of total revenue*</div> <div> </div> <div>Sectors served:<ol style="list-style-type: none"><li>Light vehicles</li><li>Electric / hybrid vehicles</li><li>Commercial vehicles off-road</li><li>Motorcycles</li></ol></div> <div>Custom-engineered products Long-term contracts (2-3 years) High margins and switching costs</div> <div>Main customers          </div>	<div>18% of total revenue*</div> <div> </div> <div>Sectors served:<ol style="list-style-type: none"><li>Inkjet printheads</li><li>HVAC systems</li><li>Commercial sonars</li><li>Flow metering</li></ol></div> <div>Standardized products Purchase orders (8-9 weeks) Lower margins</div> <div>Main customers         </div>	<div>9% of total revenue*</div> <div> </div> <div>Sectors served:<ol style="list-style-type: none"><li>Ultrasonic imaging</li><li>Therapeutic ultrasound</li><li>Dental equipment</li><li>Equipment control panel</li></ol></div> <div>Standardized products Purchase orders (8-9 weeks) Lower margins</div> <div>Main customers          </div>	<div>5% of total revenue*</div> <div> </div> <div>Sectors served:<ol style="list-style-type: none"><li>Sonobuoys</li><li>Hydrophones</li><li>Torpedo / missile control</li><li>Airplane communications</li></ol></div> <div>Standardized products ST contracts (8-9 weeks) Lower margins</div> <div>Main customers         </div>	<div>4% of total revenue*</div> <div> </div> <div>Sectors served:<ol style="list-style-type: none"><li>Macro cell base stations</li><li>Small cell base stations</li><li>Satellite communication</li><li>Wireline / network switching</li></ol></div> <div>Standardized products Purchase orders (8-9 weeks) Lower margins</div> <div>Main customers           </div>

Notes: \* As of 2019



# CTS has driven profitable growth organically and inorganically over the years

CTS key figures

<b>\$919m</b>	<b>\$476m</b>	<b>\$91.5m</b>	<b>\$81.5m</b>
Market Cap	Revenues	EBITDA	FCFF
<b>4%</b>	<b>1%</b>	<b>19%</b>	<b>11%</b>
CAPEX/Sales	Sales growth	EBITDA Margin	Net Margin

- Despite revenues being cut in half to c. \$280m in 2013 from a divestiture, they have returned to pre-divestiture levels in six years due to a successful carried out strategy. In 2018, revenue growth was of 11%
- Double-digit profitability margins portray **improvements in cost-structure** and **manufacturing efficiency gains**
- Historical sales growth is both driven by organic efforts and M&A activity, with an upward sloping trend since 2016

All figures as of FY19B

High level top and bottom lines

Revenue split by customers

● Top 12 customers	■ Cummins Inc.
● Significant customers*	■ Honda Motor
● Rest of customers	■ Toyota Motor

\*Customers with >10% of total revenue

Growth drivers

Due to the business nature, organic growth is mainly driven by (1) **direct sales efforts**, (2) **R&D**, and (3) **end-market's drivers**

Industry	Main drivers
	Connectivity, harmful emissions
	Automation, 3D printing
	Economic development, ultrasounds
	Modernization, sonar applications
	Increase in data traffic, wireline networks

Cost structure

2009 - 12	2013 - 18
83%	74%
10%	12%
3%	5%
3%	6%
1%	2%

- COGS ↓
- SG&A
- D&A
- R&D ↑
- Restructuring

Average values before and after restructuring plans of 2013

Acquisition history: last 20 years

1999	2007	2008	2012	2013	2015	2016	2017
Acquisition of Motorola's Component Products Division (CDP) Merger with Dynamics Corporation of America (DCA)	Acquisition of Alpha Ceramics, a provider of piezoelectric materials in the aerospace and defense markets for \$2m	Acquisition of Tusonix, Inc., with operations in Nogales, Mexico for \$11.2m in cash. It added EMI/RFI filters to the product family Acquisition of Orion	Acquisition of Valpey-Fisher Corporation for \$18.3m Acquisition of D&R Technology for \$63.5m, expanding automotive sensor products	Divestiture of the EMS business unit, for \$78m, to focus on core capabilities Divestiture included 1,000 employees	Acquisition of Filter Sensing Technology (FST) for \$1.9m at the end of the year, providing innovation opportunities for reducing engine emissions	Acquisition of CTG Advanced Materials, market leader of piezo components in the medical industry, for \$73m in cash	Acquisition of Noliac in May, for \$19.3m, bringing incremental sales of \$7m for the year

● Acquisition/Merger

● Divestiture

Notes: 1) FY19B was forecasted as a best effort estimation based on 2019 Q2 results, multiplying such figures by 2 due to low seasonality of the business – confirmed by CTS' Management

# Restructuring plans and repositioning greatly improved gross and operating margins

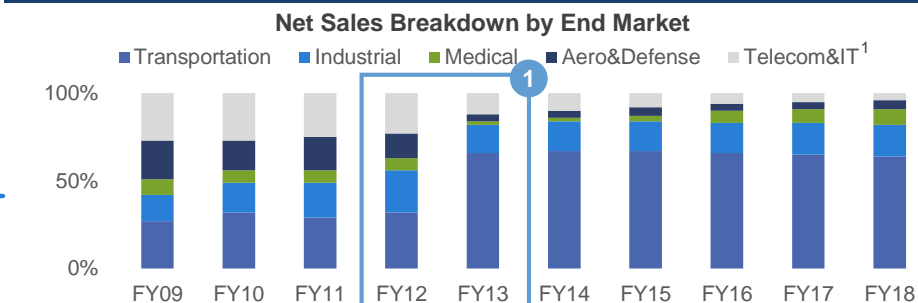
Income Statement (in \$m)	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Transportation	135	177	171	185	270	271	256	262	275	301
Industrial	75	94	118	138	66	69	65	67	76	85
Medical	45	39	41	40	8	8	11	28	34	42
Aero&Defense	110	94	112	81	16	16	19	16	17	24
Telecom&IT	135	149	147	133	49	40	31	24	21	19
Total Revenues	499	553	589	577	409	404	382	397	423	470
Growth %		11%	6%	-2%	-29%	-1%	-5%	4%	7%	11%
Total Revenues from Cont. Operations	215	282	277	306	409	404	382	397	423	470
Growth %		31%	-2%	11%	34%	-1%	-5%	4%	7%	11%
Gross Profit	99	120	110	101	121	130	128	140	140	165
Gross Margin %	20%	22%	19%	18%	30%	32%	33%	35%	33%	35%
SG&A	(67)	(72)	(72)	(80)	(70)	(55)	(57)	(62)	(72)	(74)
R&D	(14)	(18)	(20)	(21)	(23)	(23)	(22)	(24)	(25)	(25)
Reported EBITDA	37	47	36	20	49	69	64	74	77	89
Adjustments to EBITDA	35	1	(3)	(6)	10	10	30	(8)	18	5
Normalized EBITDA <sup>2</sup>	37	47	40	41	49	69	64	74	77	89
EBITDA margin	7%	8%	7%	7%	12%	17%	17%	19%	18%	19%
Net Income	(34)	22	21	20	(4)	27	7	34	14	47
Profit Margin %	-7%	4%	4%	4%	-1%	7%	2%	9%	3%	10%

EMS business unit divested

## 5 Divestiture Effects

- A higher focus on core operations allowed CTS to transform their profit margins entirely (immediate effect of 500 bps in EBITDA margin), **reducing their COGS and investing more in Research & Development** (6% vs. 3%), their main driver of new sales

## Comments



- Divestment of EMS business unit** caused a sudden hike in relative weight of the transportation end-market and a shrinkage in Telecom & IT and Aero & Defense
- The 2016 repositioning strategy aims to bring more balanced revenue split
- In 2016 and 2017 **inorganic growth accounted for 86% and 27% respectively**. The 2015 acquisition had no material impact in that year. Growth in 2018 was purely organic and came from new customers and bigger contracts in Europe
- Despite the current price erosion of the industry, CTS' **increasing gross margins** reflect the firm's success to cut costs and improve operational efficiency. Cost reduction from stems mainly from **three fronts**:
  - Steep **decrease in the costs of raw materials** from the shift of business model (EMS divestment), largely visible in 2012-2013
  - Continued efficiency gains** and increased capacity utilization in the manufacturing facilities
  - Material and labor **productivity** projects
- An aggressive increase in selling and marketing expenses to drive growth initiatives were partially **offset by the implementation of cost-containment policies in overhead<sup>2</sup>**, with an increased EBITDA margin of 19% in FY18 compared to 7% in FY12

## Reported to Adjusted EBITDA bridge

EBITDA Bridge (in \$m)	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18	Comments
<b>Reported EBITDA</b>	<b>1.7</b>	<b>45.4</b>	<b>42.8</b>	<b>46.3</b>	<b>38.9</b>	<b>59.3</b>	<b>34.4</b>	<b>82.2</b>	<b>59.2</b>	<b>83.6</b>	<p>2 • Non-recurring environmental remediation charge, <b>related to a production plant in Asheville, North Carolina</b>. This payment recorded both interim and anticipated future remediation costs and was accepted by the Environmental Protection Agency (EPA)</p>
% growth		2568%	-6%	8%	-16%	53%	-42%	139%	-28%	41%	
1 Restructuring charges	2.2	1.4	2.9	6.4	10.5	5.9	15.2	3.0	4.1	5.1	
2 Non-recurring environmental expense	-	-	-	-	-	-	14.5	-	-	-	<p>3 • Refers to the <b>CEO transition costs</b> in the acquisition of D&amp;R Technologies</p>
3 Acquisition cost of group companies	-	-	-	-	-	4.1	-	-	-	-	<p>4 • In 2011, there was a <b>fire in the facility in Scotland that damaged part of the building</b>. Insurance payments to CTS were recorded in 2011 and 2012 and were related to <b>recovery for property damage</b>. These values were removed from EBITDA as they are not related to CTS' day-to-day business</p>
4 Insurance recovery from property damage	-	-	(6.1)	(1.8)	-	-	-	-	-	-	<p>• The insurance payments for business interruptions in 2011 and 2012 (\$4.1m and \$20.9m, respectively) are not removed from EBITDA as they offset the additional COGS-level expenses in 2011 and the unrealized margins on lost sales in 2012</p>
5 Gain/Loss on disposition of PP&E	-	-	-	-	-	-	-	(11.5)	0.7	-	
6 Gain on sale-leaseback transaction	-	-	-	(10.3)	-	-	-	-	-	-	
7 Goodwill impairment	33.2	-	-	-	-	-	-	-	-	-	
8 Gain/Loss on derivatives (hedging)	-	-	-	-	-	-	-	-	-	(0.1)	<p>5 • This adjustment aims to remove from EBITDA all gains and losses when PP&amp;E is disposed, as these are non-operational, non-recurring events</p>
9 Pension settlement charges	-	-	-	-	-	-	-	-	13.5	-	
<b>Total adjustments to EBITDA</b>	<b>35.4</b>	<b>1.4</b>	<b>(3.2)</b>	<b>(5.7)</b>	<b>10.5</b>	<b>10.1</b>	<b>29.7</b>	<b>(8.4)</b>	<b>18.3</b>	<b>5.0</b>	<p>6 • Removes from EBITDA the gain on the sale &amp; leaseback transaction of the Singapore facility in 2012</p>
<b>Adjusted (Normalized) EBITDA</b>	<b>37.1</b>	<b>46.9</b>	<b>39.6</b>	<b>40.6</b>	<b>49.3</b>	<b>69.4</b>	<b>64.1</b>	<b>73.8</b>	<b>77.5</b>	<b>88.5</b>	<p>7 • This adjustments removes from EBITDA the goodwill impairment charge in Q1 2009 due to its non-recurring nature</p>
% growth		26%	-15%	2%	21%	41%	-8%	15%	5%	14%	<p>8 • In April 2018, the Company adopted a new method of derivatives hedging that will occasionally generate gains or losses. Due to its non-operating nature, it was removed from EBITDA</p>
1	<p>• <b>Restructuring charges</b> are related to the <b>2013 and 2016 strategy innovation programs</b>. Despite their apparent recurrence, according to Mr. Agrawal, these charges are not expected to continue going forward and are not related to the normal course of business at CTS Corp. Therefore, under his recommendation, they have been removed from historical EBITDA</p>										<p>9 • This adjustments removes from EBITDA the goodwill impairment charge in Q1 2009 due to its non-recurring nature</p>

## Strong, increasing operating cash flow and healthy financial profile

Balance Sheet (in \$m)	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Cash and cash equivalents	51	73	76	110	124	135	157	114	114	101
NWC excl. Cash	52	73	83	85	17	26	(6)	4	18	34
Total debt	160	208	218	293	184	167	202	200	196	170
Net Debt	19	15	17	69	(44)	(50)	(57)	(19)	(31)	(45)
Net Debt / EBITDA	0,5x	0,3x	0,5x	3,5x	(0,9x)	(0,7x)	(0,9x)	(0,3x)	(0,4x)	(0,5x)
Return on Assets - pretax	(0,0)	0,1	0,0	0,0	0,0	0,1	0,0	0,1	0,1	0,1
Return on Equity - pretax	(0,1)	0,1	0,0	0,1	0,1	0,1	0,0	0,2	0,1	0,2

Cash Flow Statement (in \$m)	FY09	FY10	FY11	FY12	FY13	FY14	FY15	FY16	FY17	FY18
Normalized EBITDA	37	47	36	20	49	69	64	74	77	89
Income taxes	(14)	(6)	(5)	(7)	(16)	(13)	(5)	(23)	(8)	(12)
Changes in pension and post retirement plans	(9)	(9)	(9)	(7)	(14)	(8)	0	0	(0)	(0)
Changes in NWC excl. Cash	(21)	(9)	(2)	68	(9)	32	(9)	(14)	(17)	
Normalized Operating Cash Flow	82	21	15	15	48	43	68	39	76	63
Non-operating related charges	3	(0)	(1)	(0)	(0)	3	6	6	(2)	3
Adj. Norm. Operating Cash Flow	85	21	14	15	48	45	74	45	75	66
as a % of revenues	17%	4%	2%	3%	12%	11%	19%	11%	18%	14%
CAPEX (total)	(7)	(13)	(20)	(16)	(14)	(13)	(10)	(21)	(18)	(28)
as a % of revenues	1%	2%	3%	3%	3%	3%	3%	5%	4%	6%
Net payments for acquisitions	1	1	(3)	(60)	77	5	1	(61)	(19)	0
Cash Flow from Investing	(6)	(12)	(16)	(74)	63	(8)	(9)	(81)	(37)	(28)
Net proceeds of long-term debt	(30)	20	4	79	(79)	0	16	(2)	(13)	(26)
Cash Flow from Financing	(35)	16	(3)	66	(87)	(15)	(7)	(9)	(21)	(42)

### Comments

1. The large cash balance is maintained to enable growth through product development and strategic acquisitions
2. CTS' non-cash **Net Working Capital decreased significantly** following the divesture of the EMS business unit in 2012 and turned negative in 2015 mainly due to increased accrued liabilities
3. Apart from these two years, CTS has generally been increasing its NWC but at a relatively stable rate
4. Since the EMS divesture, CTS has been keeping a **negative net debt balance** which is primarily driven by its large cash balance and a decrease in total debt
5. In addition to a **decrease in long-term debt from \$178m in 2012 to \$88m in 2013**, CTS also significantly **lowered its short-term debt** levels from \$115m in 2012 to **\$80m in 2014**
6. The operating cash flow is adjusted for non-operating related charges that were reported as operating to derive a more representative cash flow
7. Following the years of restructuring, CTS has been able to **constantly grow** its **adjusted operating cash flow** over the last 5 financial years and to reach an **adjusted operating margin of 13%**
8. **Total CAPEX** has been **increasing slightly** but has **not risen** to a level significantly **above 6%** of total revenues
9. **Net payments for acquisitions** have **not crossed \$100m** in absolute terms per year, despite two acquisitions occurring in 2012
10. **Net proceeds of long-term debt** show some fluctuations over the years but are relatively low
11. Further DD should be conducted and the actual in- and outflows can be seen in the appendix

Notes: 1) Non-operating charges that were reported as operating in the financial reports

Sources: Company information



# New strategies led the company to reposition itself and improve margin profile

With a new CEO entering the business in 2013 – current CEO Mr. Kieran M. O’Sullivan –, two strategy innovations in 2013 and 2016 redefined CTS’ focus and brought restructuring plans. The 2013 strategic move included the divestiture of the EMS business unit to focus on core capabilities, solely manufacturing parts and components. The 2016 move focused on a rebranding of the company and clearer definition of a common vision.

	Old business model	New strategies' main points	New strategies' results																																	
Core business	<p>Two separate business divisions, serving different segments of the OEM value chain:</p> <div><div>1 Sensors and components  Tier 2 parts for sub-assembly</div><div>2 Electronic Manufacturing Services (EMS)  Finished products &amp; full services</div></div>	<p><b>Divestiture of the EMS business unit in 2013</b> to improve competitive positioning, increase financial flexibility and transform operational margins</p> <ul style="list-style-type: none"><li>Sold by \$75m to Benchmark Electronics, Inc., capital used to drive growth in higher-margin segments</li><li>Included five manufacturing facilities and around 1,000 employees</li><li>The EMS BU did not serve the transportation market</li></ul>	<table><tr><th>Fiscal Year</th><th>Total revenues (millions)</th><th>Revenues from cont. operations (millions)</th></tr><tr><td>FY09</td><td>470</td><td>282</td></tr><tr><td>FY10</td><td>470</td><td>282</td></tr><tr><td>FY11</td><td>470</td><td>282</td></tr><tr><td>FY12</td><td>470</td><td>306</td></tr><tr><td>FY13</td><td>470</td><td>306</td></tr><tr><td>FY14</td><td>470</td><td>404</td></tr><tr><td>FY15</td><td>470</td><td>404</td></tr><tr><td>FY16</td><td>470</td><td>397</td></tr><tr><td>FY17</td><td>470</td><td>397</td></tr><tr><td>FY18</td><td>470</td><td>470</td></tr></table>	Fiscal Year	Total revenues (millions)	Revenues from cont. operations (millions)	FY09	470	282	FY10	470	282	FY11	470	282	FY12	470	306	FY13	470	306	FY14	470	404	FY15	470	404	FY16	470	397	FY17	470	397	FY18	470	470
Fiscal Year	Total revenues (millions)	Revenues from cont. operations (millions)																																		
FY09	470	282																																		
FY10	470	282																																		
FY11	470	282																																		
FY12	470	306																																		
FY13	470	306																																		
FY14	470	404																																		
FY15	470	404																																		
FY16	470	397																																		
FY17	470	397																																		
FY18	470	470																																		
Top line	<ul style="list-style-type: none"><li>CTS as a global manufacturer of electronic components and sensors and a supplier of electronics manufacturing services</li><li><b>Components and sensors</b> business unit constituted of a long list of diverse products, serving diverse end-markets with different margins</li><li><b>EMS</b> business unit, serving all markets but the automotive, with low margins; especially compared to the components and sensor business unit</li></ul>	<ul style="list-style-type: none"><li>Focus on <b>profitable growth</b> and <b>innovation</b></li><li>Efforts to return to <b>diversification</b> of end-markets</li><li><b>Simplification of business model</b> and recategorization of products by functionality</li></ul> <div><div>CTS Corporation</div><div><div>Sense sensors</div><div>Connect electronic components</div><div>Move actuators</div></div></div>	<table><tr><th>Fiscal Year</th><th>Normalized EBITDA (millions)</th><th>EBITDA margin (%)</th></tr><tr><td>FY09</td><td>40</td><td>8%</td></tr><tr><td>FY10</td><td>40</td><td>8%</td></tr><tr><td>FY11</td><td>40</td><td>7%</td></tr><tr><td>FY12</td><td>40</td><td>7%</td></tr><tr><td>FY13</td><td>50</td><td>12%</td></tr><tr><td>FY14</td><td>70</td><td>19%</td></tr><tr><td>FY15</td><td>65</td><td>19%</td></tr><tr><td>FY16</td><td>75</td><td>19%</td></tr><tr><td>FY17</td><td>78</td><td>19%</td></tr><tr><td>FY18</td><td>88</td><td>19%</td></tr></table>	Fiscal Year	Normalized EBITDA (millions)	EBITDA margin (%)	FY09	40	8%	FY10	40	8%	FY11	40	7%	FY12	40	7%	FY13	50	12%	FY14	70	19%	FY15	65	19%	FY16	75	19%	FY17	78	19%	FY18	88	19%
Fiscal Year	Normalized EBITDA (millions)	EBITDA margin (%)																																		
FY09	40	8%																																		
FY10	40	8%																																		
FY11	40	7%																																		
FY12	40	7%																																		
FY13	50	12%																																		
FY14	70	19%																																		
FY15	65	19%																																		
FY16	75	19%																																		
FY17	78	19%																																		
FY18	88	19%																																		
Operations	<ul style="list-style-type: none"><li>COGS represented c. 80% of total revenues</li><li>Capacity utilization of manufacturing locations of around 50%</li><li>Outdated and aged ERP system and little communication between facilities</li><li>&gt;4,000 employees</li></ul>	<ul style="list-style-type: none"><li>Introduction new ERP systems and cost-containment policies</li><li><b>Production efficiency improvements</b>, through consolidation of manufacturing facilities, and utilization rate expansion to <b>&gt;80% in 2018</b></li><li><b>Shift in SG&amp;A</b>, broadening sales and marketing expenditures and optimizing G&amp;A expenses</li><li>Higher <b>funding of R&amp;D</b>, performed closer to customers</li></ul>	<ul style="list-style-type: none"><li>Concentration of operations in <b>transportation end market</b></li><li>Transformation of <b>EBITDA margins</b> from single to double-digit through prioritization of core capabilities and bottom-line restructuring actions</li></ul>																																	

Notes: 1) As of 2018, license and royalty income was less than 1% of net sales

Sources: Annual Reports, Company website, SEC Filings, Investor Presentations





# Management team was put together by current CEO, following strategic moves

Executive committee			Management statistics	Achievements 2013 - 2019	
 <b>Kieran M. O'Sullivan</b> President & CEO  6 years  Before joining CTS in 2013, Mr. O'Sullivan served as Executive Vice President of Continental AG's Global Infotainment and Connectivity Business and led the NAFTA Interior Division.  Mr. O'Sullivan has over 25 years of executive leadership experience in high-growth, technology companies both in Europe and North America.  Strategic Fit: <div><div></div><div></div><div></div><div></div><div></div></div>	 <b>Ashish Agrawal</b> Vice-President & CFO  8 years  Mr. Agrawal joined CTS in June 2011 as Vice President, Treasury and Corporate Development, and was elected as Treasurer on September 1, 2011.  Before CTS, Mr. Agrawal was with Dometic Corporation, a manufacturer of refrigerators, awnings and air conditioners, as Senior Vice President and CFO since 2007.  Strategic Fit: <div><div></div><div></div><div></div><div></div><div></div><div></div></div>	 <b>Luis Francisco Machado</b> General Counsel & Secretary  4 years  Mr. Machado joined CTS in August 2 15.  Before joining CTS, Mr. Machado was Senior Vice President, Legal and Assistant Secretary at L Brands, Inc. since August 2001 and Associate General Counsel, Corporate and Assistant Secretary of Wm. Wrigley Jr. Company in Chicago since February 2006.  Strategic Fit: <div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div>C-Level experience<div><div></div><div></div><div></div></div></div> <div>Industry expertise<div><div></div><div></div><div></div></div></div> <div>Company tenure &gt;5y<div><div></div><div></div><div></div></div></div>	<div>16%Revenue growth</div> <div>136%EBITDA growth</div> <div>\$169mFree Cash Flow generation (2018)</div> <div>2Successful acquisitions (\$93m)</div> <div>5bpsOperational margin improvement</div>	
Board of directors					
<div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div><div></div></div><div>7 members, 2 women</div></div> <div>CEO</div> <div>The Board of Directors is composed of fully independent members, to the exception of Mr. O'Sullivan, CTS Corp's current CEO. There are four committees: <b>(1) Audit</b>, <b>(2) Compensation</b>, <b>(3) Nominating and Governance</b>, and <b>(4) Technology and Transactions</b>. Mr. O'Sullivan belongs only to the latter, in order to avoid conflicts of interest.</div>					
Human talent					
<div>CTS Corp employs <b>3,230 people as of 31 of December of 2018</b> (3,222 in 2017), having reduced their taskforce by roughly 1,000 employees with the divesture of the EMS business unit in 2013.</div> <div><div><div>19%</div><div>81%</div></div><div><div>Based in the U.S.</div><div>Based outside the U.S.</div></div><div><div>• <b>Advanced engineering skills</b>, not only in the production line, but also in the sales force</div><div>• Deep knowledge and expertise across <b>multiple technologies and end markets</b></div></div></div>					

Sources: Company information, Bloomberg, NASDAQ

# Increasing demand from numerous industry verticals drives strong growth

Market forecast

Sensors (sense)

9.5% CAGR

167182200219240262

201920202021202220232024

Key facts

- Global sensor market projected to grow at **9.5% CAGR**, reaching **\$287bn by 2025**
- Highest usage of sensors is in **consumer electronics** (c. 6 % in 2015) followed by the **automotive and telecom & IT sectors**
- Medical segment** expected to be the **fastest growing segment** while the **APAC region** has the largest market share

Key growth drivers

- Surge in the automotive sector
- Rise in demand of **wearable devices** and innovative applications in the biomedical sector
- Growth trends of the **Internet of things (IoT)**
- Advancements in the automation sector
- Advancements in sensors and its increasing use in smart phones and other electronic devices
- Growth in demand for sensors in the development of smart cities
- Emerging application of **radar in remote sensing**

Key players

AmphenolDelphi TechnologiesInfineonRockwell Automation

BOSCHFirst SensorMAGNET MARELLSIEMENS

ContinentalHELLAHELIXMITSUBISHI ELECTRIC

DENSOHoneywellPanasonic

STTEXAS INSTRUMENTS

Actuators (move)

8.6% CAGR

495358636875

201920202021202220232024

Key facts

- APAC market, **pneumatic actuators and linear actuators** are the fastest growing segments
- Industrial actuators expected to grow by an incremental value of approx. \$2bn until 2023 reflecting a **CAGR ~6%**
- 37% of this growth is expected to come from the **EMEA region** and an **increasing demand for electric industrial actuators**

Key growth drivers

- Increasing demand due to the development of **advanced and cost-effective actuators**
- Increasing investments** in process automation of numerous industry verticals
- Improving automotive infrastructure** in countries such as Japan, China, Norway, Germany and the US

Key players

ABBAltraIndustrial MotionKOLLMORGENRockwell Automation

CURTIS-WRIGHTMiSUMiTHOMSONSMC

FESTO

Electronic components (connect)

5.6% CAGR

361381402425449500

201920202021202220232024

Key facts

- Global electronic components market projected to grow at **5.6% CAGR** reaching \$500bn by 2024
- Fragmented industry with **significant M&A activity**
- Electronic components market consists of active components, passive components and electromechanical segments

Key growth drivers

- Rapid evolution of the automotive industry has created higher-than-expected demand for electronic components
- Growth trends of the **Internet of things (IoT)** in industrial machinery and infrastructure
- Increasing functionality** of smart phones requires larger amount of electronic components
- Decreasing smart phone life spans
- Deployment and availability of **5G networks**

Key players

ABBapi technologies corp.CISCODelphi TechnologiesFUJITSU

HRSInfineonMEKTECNISSAMSUNG






SAMSUNG ELECTRO-MECHANICSTAIYO YUDEN

PanasonicNXPSTTEXAS INSTRUMENTS

TE

Sources: Market Research Future, Allied Market Research

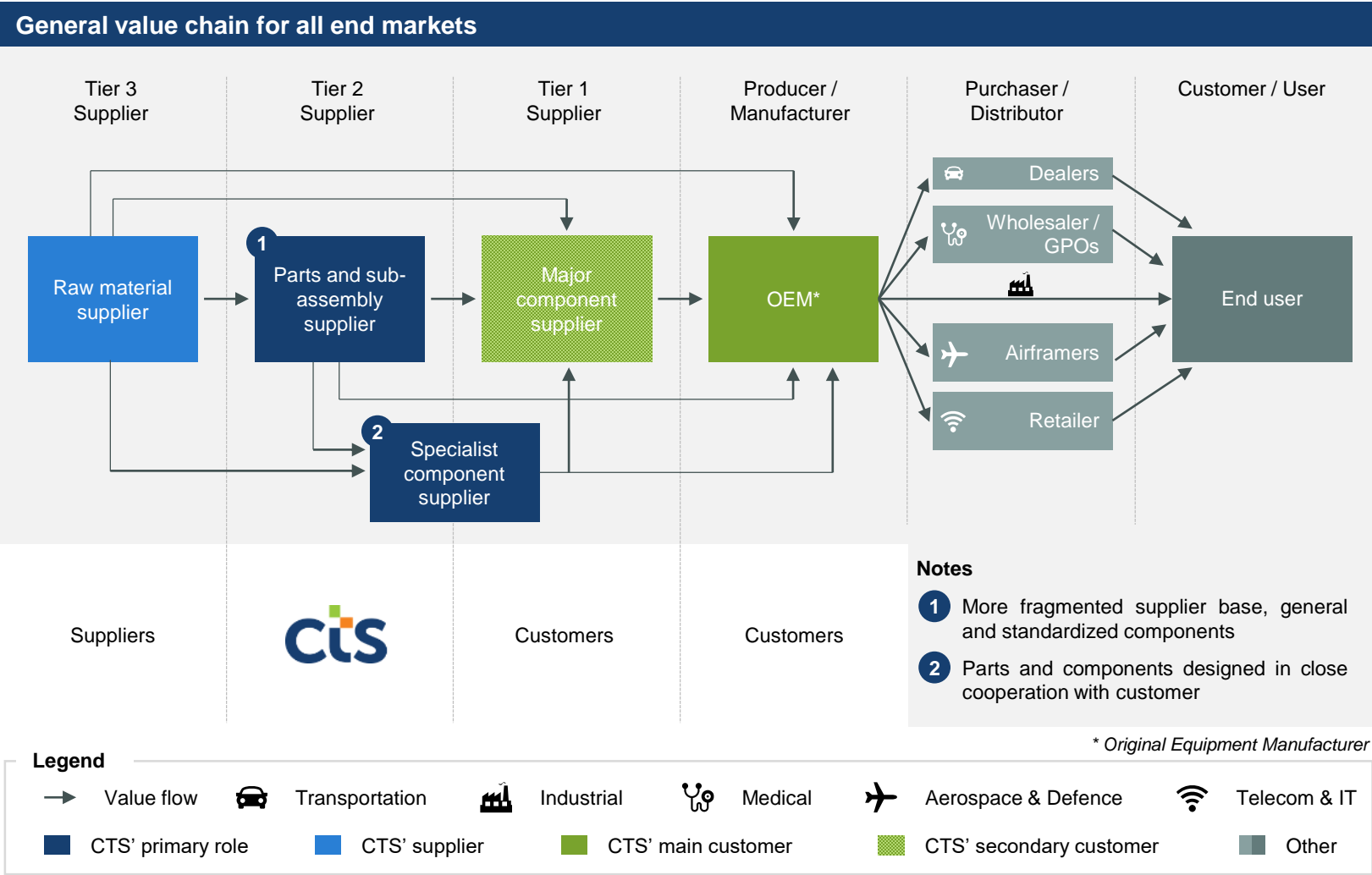
# All end markets growing mid-single digits offering stability through diversification

	Transportation	Industrial	Medical	Aerospace & Defense	Telecom & IT
SAM <sup>1</sup>	<div>\$3.3 bn</div> <div>2%-4.5% CAGR</div>	<div>\$1.7 bn</div> <div>3.9%-7% CAGR</div>	<div>\$0.2 bn</div> <div>5.2% CAGR</div>	<div>\$0.7 bn</div> <div>8% CAGR</div>	<div>\$1.8 bn</div> <div>6.1% CAGR</div>
Key facts	<ul style="list-style-type: none"> <li>Automotive revenue pool projected to increase significantly <b>reaching \$6.7tn</b> by 2030, including \$1.5tr related to shared driving and connectivity services</li> <li>Vehicle <b>unit sales</b> expected to <b>grow at 2%</b> annually</li> <li><b>Light commercial vehicle</b> market expected to grow at <b>4.5% CAGR</b></li> <li><b>Electric vehicle sales</b> expected to reach <b>6.7m units</b> in 2019</li> </ul>	<ul style="list-style-type: none"> <li>CTS' subsectors within the Industrial end market grow at <b>CAGRs</b> between <b>3.9% and 7%</b></li> <li>Their <b>combined market size</b> is approx. <b>\$19bn</b> and their individual sizes range between approx. \$2bn to \$7bn</li> </ul>	<ul style="list-style-type: none"> <li>Global medical devices market expected to grow at <b>5.2% CAGR</b> and to reach <b>\$795bn</b> by 2030</li> <li>Relentless <b>downward pressure on pricing</b></li> <li>Expected <b>increase in M&amp;A activity</b> Integration of value chain Repositioning of firms</li> <li><b>US</b> will continue to be <b>dominant market</b> reaching \$30 bn by 2030</li> <li>Chinese market will reach \$20 bn (25%) by 2030</li> </ul>	<ul style="list-style-type: none"> <li>Global market expected to grow from \$8.1tr (2018) to <b>\$8.7tr by 2028</b></li> <li><b>Sonobuoy market</b> expected to grow at <b>8% CAGR</b></li> <li><b>Highly fragmented suppliers base</b> is expected to become more consolidated</li> <li><b>Significant M&amp;A activity</b> expected to remain strong</li> <li>EV/EBITDA multiples rose from 9.9x (2005) to 14.2x (2018)</li> <li>Very high aircraft order backlog</li> </ul>	<ul style="list-style-type: none"> <li>Global telecommunications market expected to grow from \$18bn (2017) at <b>6.14% CAGR to \$29bn (2026)</b></li> <li>5G is expected to create significant business opportunities for telecom companies</li> <li>Changing dynamics and competitive pressures expected to fuel <b>M&amp;A activity</b></li> <li><b>CTS' relevant subsectors are growing at double digit CAGRs</b></li> </ul>
Growth drivers	<ul style="list-style-type: none"> <li>ACES trends: <b>autonomous driving, shared mobility, electrification, and connectivity</b></li> <li>Improving automotive infrastructures in countries such as China, Japan, Germany, Norway and the US</li> <li>Development of <b>emerging markets</b></li> <li>Stringent vehicle <b>emissions norms</b></li> </ul>	<ul style="list-style-type: none"> <li>Internet of things (IoT) will have a significant impact on the industrial market</li> <li>Increasing <b>industrial automation</b> increases demand for innovative products and solutions</li> <li>Increasing <b>energy efficiency</b> plays a major role in the industry</li> </ul>	<ul style="list-style-type: none"> <li><b>Economic development</b> in emerging countries</li> <li>Increase in <b>lifestyle diseases</b></li> <li>Increasing demand for innovative products (e.g. wearables) and services (e.g. health data)</li> </ul>	<ul style="list-style-type: none"> <li>Growing global commercial aircraft production</li> <li>Rising oil prices</li> <li>Rising <b>geopolitical tensions</b></li> <li><b>NATO members</b> expected to <b>increase their defense spending</b> towards agreed 2% of GDP</li> </ul>	<ul style="list-style-type: none"> <li>Evolution of <b>innovative services</b> such as e-learning</li> <li>High speed internet availability at <b>low prices</b></li> <li><b>Advancing technology</b> that attracts the youth</li> </ul>
Key players <sup>2</sup>				<div>High growth, supporting quick diversification</div> 	

Notes: 1) Serviceable attainable market 2019; 2) Represent players one level down the value chain

Sources: Company information, McKinsey, BBC Research, Market Research Future

# Tier 2 supplier, CTS competes best with custom engineered products for major OEMs



Value chain dynamics by end market <sup>1</sup>	
<b>Transportation</b>	1 2
<ul style="list-style-type: none"><li>Proximity with suppliers is important: close cooperation around design, engineering, and technology</li><li>OEMs work with several suppliers to avoid shortages</li><li>Trend to contract with global suppliers instead of local ones</li></ul>	
<b>Industrial</b>	1
<ul style="list-style-type: none"><li>CTS supplies more standardised components than for the automotive and A&amp;D markets</li><li>High levels of inventory held at customer warehouses</li><li>Importance placed on durability, reliability, and on-time delivery</li></ul>	
<b>Medical</b>	1
<ul style="list-style-type: none"><li>Unsustainable growth in healthcare expenditure puts pressure on prices, OEMs however experiencing shift from cost to value</li><li>Importance on high-quality, high-precision components</li><li>Supply chains account for &gt;40 % of medical device costs</li></ul>	
<b>Aerospace &amp; Defence (A&amp;D)</b>	1 2
<ul style="list-style-type: none"><li>Highly fragmented supplier base with consolidation trends</li><li>OEMs required to hold high levels of inventory by governments</li><li>Sole source suppliers reduce OEMs' negotiation power</li><li>Long term relationships with suppliers are encouraged</li></ul>	
<b>Telecom &amp; IT</b>	1
<ul style="list-style-type: none"><li>Little obsolescence risk for suppliers of components, given cell base stations are based on mature, stable technologies</li><li>Innovation opportunities with each gen of wireless tech</li><li>Industry shift from dedicated to general-purpose equipment</li></ul>	

Notes: 1) Focus on the OEM and/or Tier 1 suppliers' relationship with CTS Corp as a supplier

CTS is positioned to compete most successfully with custom engineered products



Porter's 5 forces

1

Competition in the industry

LowHigh

Competition is mainly based on product features, technology, quality, price, reliability, delivery and service

Number of competitors varies greatly between product lines

Some large competitors are highly diversified and are competing with CTS only in some of the markets they are serving

2

Threat of new entrants

LowHigh

High entry barriers due to technological know-how, existing patents, and the highly asset-intensive nature of the industry

New entrants must establish a reputation to attract clients

3

Power of suppliers

LowHigh

Relatively low power of suppliers due do its large base

Only market-led price behaviour of raw materials impacts CTS

4

Power of customers

LowHigh

High bargaining power of customers

Downward pressure on pricing from OEMs in several industries

Customers generally work with several suppliers to avoid shortages

Customers have recently been reducing the number of suppliers while increasing the volume of orders

5

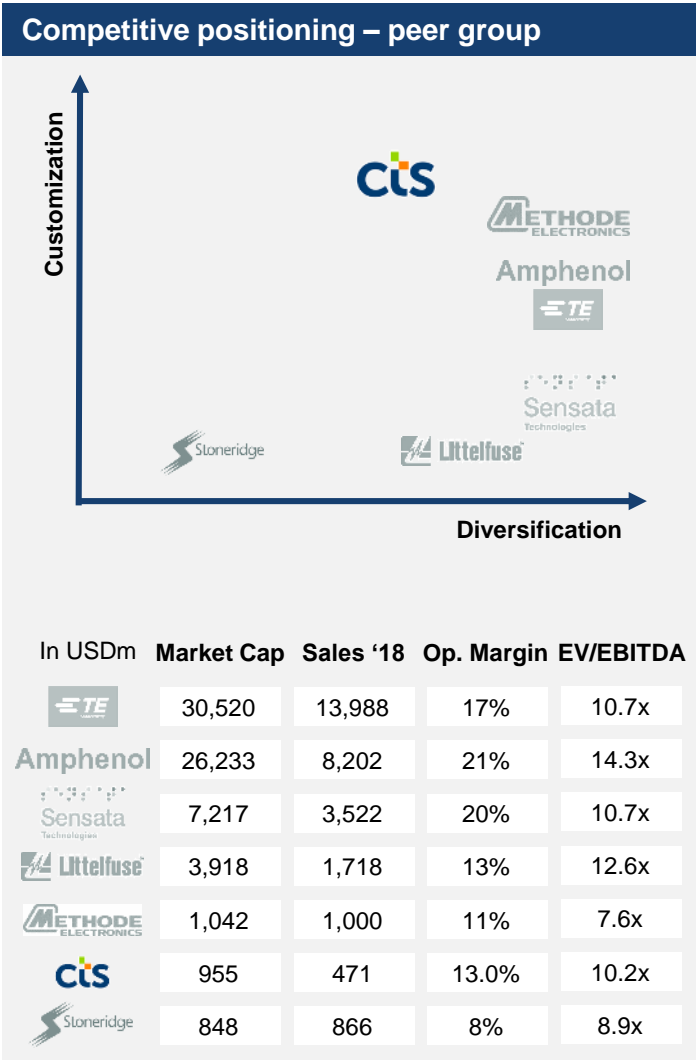
Threat of substitute products

LowHigh

Relatively high threat

Short product lifecycles require strong focus on innovation

Technical obsolescence



Comments

Diversification

Breadth of product portfolio

Number of different end markets served

Customization

Offering includes custom-engineered products

Very high if products are developed from scratch according to customers' needs

Competitor selection

Selection resembles CTS' peer group as named by CTS' CFO

Companies that offer products and services into similar end markets

General comments

CTS has many competitors, most of which are not illustrated in the competitive map

Market is highly fragmented due to the tremendous amount of different applications of the products

Many of the large and highly diversified main players mentioned in the general market overview compete with CTS in one of its sub-sectors

CTS is a diversified player by serving 5 end markets although other companies, such as Methode Electronics, are larger and even more diversified (8 end markets)

CTS is part of the companies offering the highest degree of customization to their clients



# Ticking all boxes for a great target, CTS has noteworthy value creation opportunities

## Deal Rationale

### 1 Robust fundamentals

- Healthy **cash flow generation** (c 17% of sales and c. \$70m annually through 2022)<sup>1</sup>
- Proven business model with **profit margins above industry margins** (GM of 35%, EBITDA margin of 18%)
- **Leverageable balance sheet** with low CAPEX (c. % of sales) and strong asset positions
- Robust technology IP position

### 2 Skilled talent pool

- The superior performance of **CTS' new management** (improved margin profile by c 1,000bps in 6 years) suggests a competent, focused, and motivated leadership team
- **Experienced team of sales engineers' in the ground**, capable to attract and retain valuable customers and industry leaders

### 3 Acquisition history

- Historical M&A activity (40-60% of FCF has been deployed for acquisitions) portrays company's **willingness to acquire new companies** in the future
- Proven track record of successful sourcing, selection, and target integration, as seen in CTS' **synergistic acquisitions**

### 4 Optimistic industry behaviour

- All industries served by CTS show **optimistic growth** projections over the next five years
- **Actionable megatrends** in several subsegments of CTS' markets and **emerging opportunities in adjacent sectors**
- Increased demand of CTS' products, stemming from **trends such as IoT, automation, haptics, 5G, environmental laws**

## Value creation strategies

### A - Buy-and-build



#### Strategic acquisitions

- Use high FCF generation to acquire horizontal targets with exposure to attractive sectors and sound R&D and strategic IP positions

#### Why?

- Improved competitive position and double-digit growth
- Fragmented semiconductor industry and expected consolidation trends

### B - Organic growth



#### Strategic internationalization

- Expand operations into untapped and under-served high-potential regions such as APAC

#### Why?

- Exploit regional differences and growth opportunities
- Diversify operations geographically to ensure cash flow stability



#### Strengthening of top customers

- Increase revenues to current customers in high-growth sectors to >10%, negotiating long-term contracts with them

#### Why?

- Capitalise on a higher number of long-term contracts for cash flow stability
- Profit from increased demand of upcoming market segments



#### End market transformation

- Leverage industry mega trends within Aero & Defense and Telecom & IT to diversify customer base

#### Why?

- Currently unbalanced client portfolio by end-market, losing on high-growth market opportunities



### C - Operational improvements

#### Internal restructuring

- Enhance restructuring efforts to raise profitability margins towards upper bound of peer group's margins

#### Why?

- Existing opportunities for further improvements
- Plan already in motion makes roll out of new initiatives easier

Notes: 1) Excludes acquisition CAPEX outflows

Sources: Cowen's Broker Report 2019: CTS Corporation Equity Research

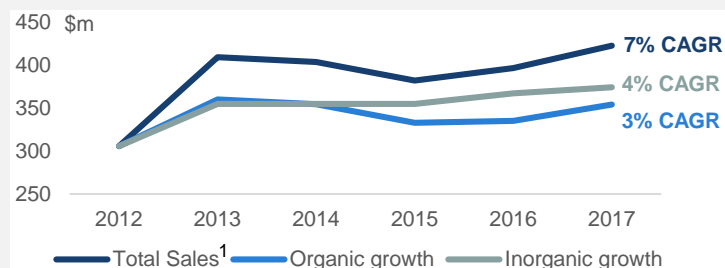
# M&A enables superior growth and an improved competitive position

## Status quo

CTS has successfully been acquiring attractive targets to increase sales and gain access to cutting edge technologies in the past

- Management has proven its ability to capitalize on synergies and integrate the acquired businesses
- Highly fragmented markets offer opportunities for further consolidation and strengthening of CTS' competitive position
- The significant downward pressure on prices is very challenging for Tier 2 suppliers, particularly for smaller sized businesses, leading to consolidation in the industry

**Inorganic growth** has been playing a **major role** in CTS' development in recent years



## Strategy rationale

Build a stronger competitive position to create a significant player in the market, rapidly increase sales and operating income and benefit from opportunities in high-growth end markets

### Competitive position

- **Highly fragmented market** offers many opportunities for M&A in order to significantly increase CTS' market share
- Effective method to strengthen CTS' competitive advantage by enhancing its technology portfolio, expanding its product portfolio and capitalizing on synergies

### Sales growth

- Leverage CTS' ability to **grow sales inorganically** as proven in the past
- The APAC region and the Aerospace & Defense and Telecommunications & IT segments offer the best opportunities for rapid growth

### Internationalization

- **Leverage industry mega trends** to gain access to high-growth regions by acquiring established players in the relevant markets
- Expand geographic reach by entering new markets and gaining direct access to intellectual property and customer relationships

## Objectives

### 1 Achieve superior growth

- Gain significant position in **fastest growing end markets** and regions
- Select and acquire target companies with strong cash flows and solid revenue growth
- Achieve an **EBITDA over \$250m** in the anticipated exit year 2024 and an **EBITDA margin above 16%** over the investment period

### 2 Ameliorate competitive position

- Achieve **higher bargaining power** with customers and form **strong customer relationships** to ensure cashflow stability
- Become a **significant global player** capable of quickly reacting to and benefitting from market opportunities
- Enhance technology portfolio and expand product range to **increase competitive advantage** and differentiate CTS from the industry



## Expected results




































- **Additional EBITDA of over \$50m**
- Gain from **multiple uplifts** between **1.8x – 4.6x EBITDA** through synergies and multiple arbitrage
- **Broader geographic reach** covering the high-growth regions
- Enhanced product and technology portfolio and strong customer relationships

## Execution

- Acquire at least four of the five carefully pre-selected targets, which are located in Switzerland, New Zealand and Taiwan
- Focus on a **fast integration process** to quickly benefit from **cost synergies** which can be achieved by consolidation of production facilities and functions
- Exercise tight control and have a solid reporting system in place to track performance and increase efficiencies

Notes: 1) Total sales from cont. operations, i.e. excluding EMS business in 2012

# Strategic targets offer superior growth and support the other strategies

Elma Electronic		Rakon		Excel Cell Electronic		Tokyo Cosmos Electric		Taitien Electronics <sup>1</sup>																																																			
 		 		 		 		 																																																			
Description	<ul style="list-style-type: none"><li>Founded in 1962 and headquartered in Wetzikon, Switzerland, the company employs 745 people in Europe, the Americas and Asia</li><li>The firm designs and manufactures electronic enclosures and passive electronic components</li></ul> <div></div>		<ul style="list-style-type: none"><li>Founded in 1967 and headquartered in Auckland, New Zealand, the company operates through 5 manufacturing plants and 5 R&amp;D centers</li><li>The firm designs and manufactures world leading frequency control solutions</li></ul> <div></div>		<ul style="list-style-type: none"><li>Founded in 1981 and headquartered in Tai Chung, Taiwan, the company has manufacturing facilities in Taiwan and China</li><li>The firm is engaged in the processing, manufacture and trading of electronic components</li></ul> <div></div>		<ul style="list-style-type: none"><li>Founded in 1957 and headquartered in Kanagawa, Japan, the company has 4 production sites in Japan and 2 in China</li><li>The firm is a worldwide supplier of electronic components specializing in quality potentiometer products</li></ul> <div></div>		<ul style="list-style-type: none"><li>Founded in 1976 and headquartered in New Tapei City, Taiwan, the company has manufacturing sites in China and the US</li><li>The firm is a quartz high frequency control component manufacturer and the only manufacturer in Taiwan that provides the OXCO technique</li></ul> <div></div>																																																		
	<table><tr><td>EBITDA FY18 (\$m)</td><td>10.7</td></tr><tr><td>Entry multiple<sup>2</sup></td><td>9.4x</td></tr><tr><td>Multiple post synergies</td><td>8.8x</td></tr><tr><td>Multiple at exit</td><td>10.6x</td></tr><tr><td>Total multiple uplift</td><td>1.8x</td></tr></table>		EBITDA FY18 (\$m)	10.7	Entry multiple <sup>2</sup>	9.4x	Multiple post synergies	8.8x	Multiple at exit	10.6x	Total multiple uplift	1.8x	<table><tr><td>EBITDA FY18 (\$m)</td><td>7.5</td></tr><tr><td>Entry multiple<sup>2</sup></td><td>6.5x</td></tr><tr><td>Multiple post synergies</td><td>6.0x</td></tr><tr><td>Multiple at exit</td><td>10.6x</td></tr><tr><td>Total multiple uplift</td><td>4.6x</td></tr></table>		EBITDA FY18 (\$m)	7.5	Entry multiple <sup>2</sup>	6.5x	Multiple post synergies	6.0x	Multiple at exit	10.6x	Total multiple uplift	4.6x	<table><tr><td>EBITDA FY18 (\$m)</td><td>6.7</td></tr><tr><td>Entry multiple<sup>2</sup></td><td>7.8x</td></tr><tr><td>Multiple post synergies</td><td>7.3x</td></tr><tr><td>Multiple at exit</td><td>10.6x</td></tr><tr><td>Total multiple uplift</td><td>3.3x</td></tr></table>		EBITDA FY18 (\$m)	6.7	Entry multiple <sup>2</sup>	7.8x	Multiple post synergies	7.3x	Multiple at exit	10.6x	Total multiple uplift	3.3x	<table><tr><td>EBITDA FY18 (\$m)</td><td>10.9</td></tr><tr><td>Entry multiple<sup>2</sup></td><td>8.9x</td></tr><tr><td>Multiple post synergies</td><td>8.3x</td></tr><tr><td>Multiple at exit</td><td>10.6x</td></tr><tr><td>Total multiple uplift</td><td>2.3x</td></tr></table>		EBITDA FY18 (\$m)	10.9	Entry multiple <sup>2</sup>	8.9x	Multiple post synergies	8.3x	Multiple at exit	10.6x	Total multiple uplift	2.3x	<table><tr><td>EBITDA FY18 (\$m)</td><td>1.5</td></tr><tr><td>Entry multiple<sup>2</sup></td><td>9.3x</td></tr><tr><td>Multiple post synergies</td><td>8.6x</td></tr><tr><td>Multiple at exit</td><td>10.6x</td></tr><tr><td>Total multiple uplift</td><td>2.0x</td></tr></table>		EBITDA FY18 (\$m)	1.5	Entry multiple <sup>2</sup>	9.3x	Multiple post synergies	8.6x	Multiple at exit	10.6x	Total multiple uplift
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Rationale	<ul style="list-style-type: none"><li>Revenue growth</li><li>Benefit from strong growth in the Aero &amp; Defense, Telecom &amp; IT, and Industrial end markets in Europe</li><li>Gain market share and strengthen competitive position in relevant markets</li></ul>		<ul style="list-style-type: none"><li>Revenue growth</li><li>Benefit from strong growth in the Aerospace &amp; Defense and Telecom markets in APAC region</li><li>Strengthen competitive position in these relevant markets</li></ul>		<ul style="list-style-type: none"><li>Revenue growth</li><li>Enhance operations in APAC and strengthen competitive position</li><li>Opportunity to consolidate operations with existing facilities in Taiwan and benefit from cost synergies</li></ul>		<ul style="list-style-type: none"><li>Revenue growth</li><li>Strengthen position in the APAC region, particularly in the Telecommunications &amp; IT and Medical end markets</li></ul>		<ul style="list-style-type: none"><li>Revenue growth</li><li>Strengthen position in the Telecommunications &amp; IT market in the APAC region</li><li>Opportunity to consolidate operations with existing facilities in Taiwan and benefit from cost synergies</li></ul>																																																		
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Notes: 1) Not acquired in investment case; 2) Based on relative valuation methods

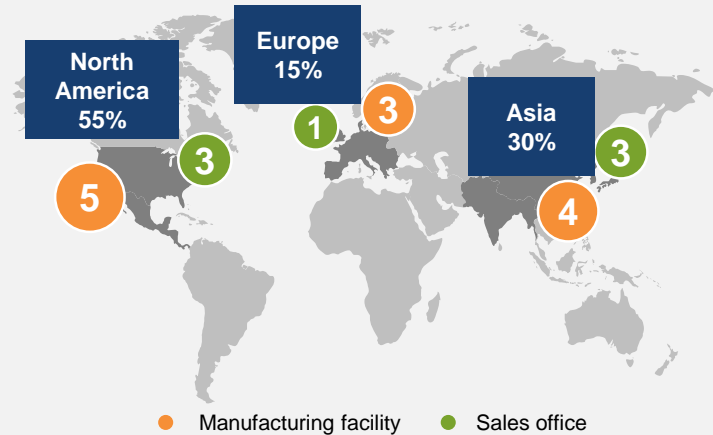
Sources: Reuters, company websites, annual reports

# Significant opportunities in Europe and APAC region to profit on strong growth

## Status quo

CTS is a global player who manufactures its products in North America, Europe and Asia

- 55% of CTS' revenues are generated from its North American operations in the US and Mexico
- The European and Asian markets offer great potential but are currently still under-served



## Strategy rationale

Current mega trends offer significant growth opportunities for CTS either by expanding current operations in the relevant markets or by entering completely new geographic markets

### APAC

- Asian market is experiencing strong **growth across nearly all end markets** mainly due to economic development
- The **Telecommunications & IT** segment is expected to grow particularly strong in the Asian market

### Europe

- European NATO member states try to **increase their defence spending** to the agreed 2% of GDP. France plans to increase defence spending by 40% until 2025
- The **Industrial end market** is very large in Europe and expected to grow rapidly

### Others

- Currently weak presence in other regions such as South America, the Middle East and Australia & New Zealand
- Increasing but under-served demand from those regions offers opportunities for revenue growth and quick market share gains

## Objectives

### 1 Broaden geographic reach

- Achieve a stronger foothold in Europe through the acquisition of a target in Switzerland and expansion of production in existing facilities in the Czech Republic
- Benefit from growth opportunities in APAC by expanding operations in Taiwan and entering the market in New Zealand
- Increase sales to major players in the Asian Telecom & IT market such as Ericsson and Nokia to leverage double digit CAGRs within this region

### 2 Cash flow stability

- Diversify operations geographically to ensure robust and stable cash flows that are not to reliant on the economic development in one region
- Establish an organizational structure capable of reacting quickly to emerging market trends and opportunities
- Significantly grow cash flows over the investment period

## Expected results

- **Revenue growth of c.10%** and enhanced customer base
- **Broader geographic reach** covering the high-growth regions
- **More balanced sales split** reducing **North America's** relative share to **40-45%** and increasing **Europe's** and **Asia's** to **20%** and **35-40%**, respectively
- Strong global market presence and reputation

## Execution

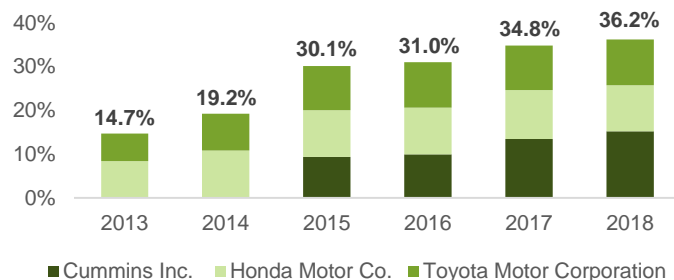
- **Expand operations** in regions where CTS is already present and improve sales presence in the most attractive end-markets within these regions
- The European Aerospace & Defense market and the Telecommunications market in the APAC region should be the focus of this expansion
- **Win long-term contracts** in relevant markets and build strong customer relationships

# Top customers and stronger contracts result in robust, stable cash flows

## Status quo

- CTS has focused on increasing its **share of sales to significant customers** over the last five years, more than doubling it between 2013 and 2018
- To date, all significant customers are within the **Transportation end-market**, which has generated a concentration of revenue share in this industry, at 64% in 2018
- Contracts with significant customers are currently subject to **purchase orders with no volume agreements**
- Significant customers can reduce orders and/or substantially change the terms of the business held with CTS

Development of significant customers



## Strategy rationale

- Due to the close relationship inherent with significant customers, CTS' sales engineers work jointly with them in researching, developing, and manufacturing custom-engineered products, as well as supplying them with more standard components
- Significant and top customers **power CTS' R&D capabilities**, providing the firm with the technical knowledge to develop and standardize products faster, boosting sales with smaller customers
  - Due to the nature of the relationship, contracts with these type of clients are longer term, contributing **cash flow stability and predictability** to a certain extent
  - Negotiation and bargaining power are higher with significant customers that order application-specific products, **allowing for contractual improvement potential**

## Market opportunities

- **Cell base stations (Telecom & IT)** sector – projected 5y CAGR of consists of a few large players, out of which some are already CTS clients
- **Sole source procurement in Aero & Defense** makes clients in this sector highly loyal, bringing more regular and constant orders. Upward trends in France's defense spending point to growth opportunities

## Objectives

### 1 Add top/significant customers from strategic end-markets

- Increase sales share with strategic existing customers in Telecom & IT, given the high-growth trends in the cell base stations (CBS) segment
- Capture or strengthen one or two significant customers in the Aero & Defense market in Europe, potentially in France



**NOKIA**

Key players in CBS  
Already CTS' customers



**SAFRAN**  
AEROSPACE · DEFENCE · SECURITY

French-based  
YoY growth >10%



**LOCKHEED MARTIN**

CTS customer  
Global player

### 2 Revenue share increase and contractual improvements

- Bring revenue share from top customers to **45-50% for more robust and predictable cash flows** without significantly enlarging business risk from reduced orders
- Re-negotiate contracts to include **duration and volume agreements**, specifically for custom-engineered products



## Expected results

- **More stable and predictable cash flows**, stemming from better contractual terms
- **Increased business with custom-engineered components**, CTS' most competitive and profitable products, driving **Gross margin from 34% in 2019 to 38% in 2024**
- **Growing trust and loyalty** from top customers, attracting new ones through improved reputation in the industry to drive **A&D 19-24 CAGR to 28% and Telecom to 52%**

## Execution

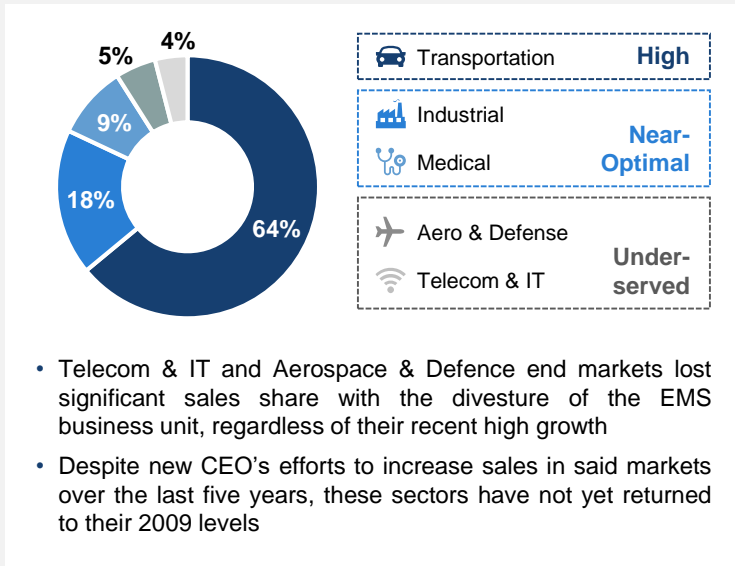
- **Bolster intimate relationships** with top and significant customers, creating sales strategies that allow for desired contractual agreements
- Intensify sales efforts to capture key players with a **new skilled taskforce of sales engineers** – strategic hires in key markets and engineering skills development trainings



# More balanced revenue split to focus on underserved, higher growth segments

## Status quo

CTS' current customer profile **highly tilted towards transportation end market**, leaving other profitable and growing industries underserved and increasing the business cyclicity risk due to lack of diversification



## Strategy rationale

Take advantage of accelerating growth opportunities in some end markets to diversify customer portfolio and boost revenues

- Transportation**
  - Reduction of harmful emissions and autonomous driving bring opportunities for the Sense and Move product lines
  - Softened demand in automotive end-market calls for reduction of relative revenue share, without compromising growth
- Aerospace & Defense**
  - Increased spending in defense budgets across the globe due to surging geopolitical tensions signifies rising demand in sonar applications
- Telecom & IT**
  - 5G technology and connectivity trends contribute to a projected 17% CAGR in small cell base stations
  - Expanding market opportunity within the haptic applications, such as Fingerprint Identification Sensing, using piezo technology
  - The trend towards general-purpose equipment (vs. dedicated), allows for a longer value capture of R&D investments in the Connect product line

## Objectives

- Revenue growth**
  - Through R&D, capitalize on new market opportunities to reach a target revenue growth of c. 10% over the next 5 years (vs. 3% in previous 5 years)
  - Continue driving moderate sales growth in less volatile industries, (automotive, industrial, and medical) for cash flow stability
  - Leverage emerging industry megatrends in Aerospace and Telecom to drive growth from underserved end-markets
- Customer-base diversification**
  - Diversify revenue split to reduce business cyclicity risk through the reduction of relative weight of Transportation and increasing weight of the Telecom & IT and Aero & Defense end-markets
  - Targeted revenue split by 2024:

10-20%	15%	50%
10-15%	5-10%	

 <b>Expected results</b>	<ul style="list-style-type: none"><li>Double-digit organic revenue growth (c. 10% on average over holding period) and reduced business cyclicity risk, providing robust and stable cash flows</li><li>Expansion of all product lines and stronger proactive innovation, enriching the firm's IP portfolio through R&amp;D</li><li>Enhanced customer base and penetration in fast-growing market segments</li></ul>	<b>Execution</b>	<ul style="list-style-type: none"><li>Intense R&amp;D spending to proactively respond to trends, especially in Telecom &amp; IT (Compact RF filters, haptic sensors), Automotive (RF sensing, accelerator modules), &amp; Defense (sensors, single crystal tech) and gain traction within those markets</li><li>Increased sales efforts to close new contracts with defense customers and gain traction in new market segments (automatic vehicles, 5G tech infrastructure)</li><li>Dismiss less-profitable clients in automotive to focus on major customers</li></ul>
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# Enhanced restructuring efforts further increase profitability margins

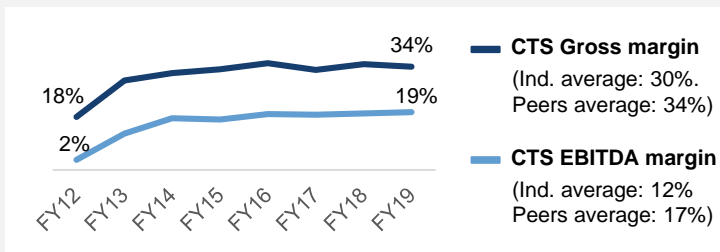
## Status quo

Since Mr. O'Sullivan took office in 2013, **restructuring and rebranding plans** were put into action in order to transform the firm's margin profile and reposition CTS as a specialized supplier of sensors, electronic components and actuators

### Plans objectives

- Cost cutting and efficiency gains in manufacturing and overhead
- Cease operations of underutilized production plants and increase capacity utilization in other locations
- Increase R&D facilities to support international operations
- Improvements in working capital
- Higher focus on marketing & sales

### Results until 2019



## Strategy rationale

### Actions taken to date

- Transition of Elkhart and Indiana manufacturing plants into R&D facilities as a measurement to prioritize R&D effectiveness
- Consolidation of manufacturing into 11 locations (initially 15), and increased utilization rate of >80% in 2018 (vs 50% in 2013)
- Simplification of operations and consolidation of production plants, resulting in lay-off of c. 470 employees
- Partial implementation of ERP systems globally, in 6 manufacturing and 2 shared services operations

With the restructuring plan already into motion and its achieved results to date, there is optimism that further restructuring will prove successful:



**Employees have accepted and embraced the change**, easing the implementation of new restructuring initiatives



**Positive first effectiveness test of new ERP system** points to future beneficial results in other locations

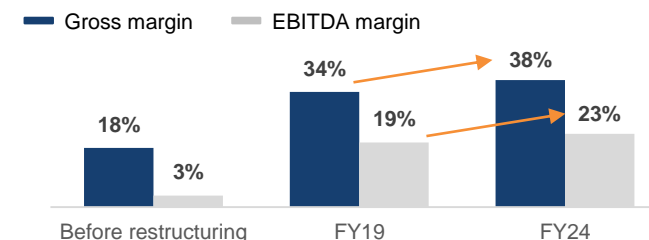


Further manufacturing consolidation still **allows for growth opportunities**, if more efficiencies are achieved in-house

## Objectives

### 1 Margins close to peer group's upper bound

- Hike organic profitability margins towards the figures of the best performing peers (Gross: 55%, EBITDA: 23%) through **bottom-line efficiency improvements**



### 2 Consolidation in low-cost manufacturing locations

- Manufacturing locations in regions such as East Europe and Asia have been of historical low production costs for CTS<sup>1</sup>
- Given strategies to internationalize in the APAC region and intensify sales in Europe, it is of most value creation to **move a larger share of manufacturing to these geographies**



## Expected results

- **Profitability margins** among closest peers - **38% of GM and 23% EBITDA margin**
- Fully **optimized overhead** costs and **maximized efficiency** gains across the firm
- **High utilization rates** across all manufacturing facilities, leaving necessary space to grow within business plans objectives
- Set a precedent for **better expense provision** planning for less volatile cash flows

## Execution

- Assess adequacy of manufacturing capacity to **move operations of Danish factory into lower-cost locations**, such as the **two factories in Czech Republic**
- **Implement ERP systems continuously** in all CTS' facilities to achieve efficiencies, enable better communication, and rollout company-wide productivity projects
- Implement **training programs**, especially for sales and marketing staff and manufacturing employees to facilitate restructuring

## Reflection on skills attained before and during the work project

### Skills attained during Work Project

It was an interesting and very useful experience to develop my Master's thesis under the Private Equity Challenge format, as it allowed me to gain key skills in the area of finance where I intend to build a career on – and where I currently work.

Throughout the entire project, I was able to apply key concepts of finance to a nearly real-life scenario, developing during these months a complex leveraged buyout model that included several valuation methods, business plan forecasting, returns analyses, and debt structuring scenarios, among other calculations; and an entire Investment Committee Paper which covered all main aspects of a real investment paper.

Working as an M&A Analyst on a company owned by private equity fund Brigdepoint, my focus is on buy-side M&A deals, developing business plans, LBO models, and investment papers on a daily basis. With the development of this PE Challenge, I gained strong competencies that have proven useful for my current position, such as advanced excel modelling, strong analytical skills, financial statement analysis on a deep level, LBO structuring and returns analyses.

On a more detailed base, I learned how to breakdown the value creation of an LBO transaction, how to properly normalize the EBITDA of a company and fully understand the impact of debt and equity in the structuring of a company's capital, all crucial skills to perform my job successfully.

Moreover, since I started working while still finishing the work project, I was able to use knowledge from work for the thesis; and I realized how real-life oriented this work project format was. I am, thus, very grateful to have had the opportunity to work with this thesis format; as it prepared me and equipped me with the necessary expertise to start my career.

However, I not only gained hard finance skills. Working in a group – even though we were only two people – helped me acquire also soft skills, such as teamwork, tolerance, and the ability to work with a completely different person under stressful and time-limited circumstances.

In general, I am very satisfied with the outcome of the Master's thesis for my personal and professional development.

### Skills attained during Master Degree

During the entire Master in Finance program, I focused my studies, courses, and extra-curricular projects on Corporate Finance, which is the area of finance I like the most. I did so in order to be prepared to build a career in either M&A or Private Equity.

My decision to do the Private Equity Challenge as my Master's work project was no different. I chose it due to my strong interest in the area as well as for the preparation it would give me for my professional future.

I believe the Master in Finance provided several crucial skills for the thesis. During the program, I gained excel modeling and report building skills, as well as key financial hard competencies that were necessary for the development of this work project, such as several corporate valuation methodologies, financial statement analysis, basic LBO structuring and debt schedule modeling, capital structure optimization, and business plan forecasting.

During the degree I also learned to build company and market analyses, focusing them in the most relevant information for different financial purposes.

However, I believe the soft-skills to be some of the most useful tools attained during my master's degree, not only for the development of this work project, but for both my personal and professional lives.

Studying at Nova SBE was an incredible opportunity to work with people from diverse academic backgrounds and nationalities, which shaped me into having broader points of view, a more open and tolerant mind, and creative approaches to problem-solving. It also taught me how to work with people with different work ethics, schedules, and ways of doing things; how to efficiently manage time and control stressful situations, as well as to prioritize tasks and think critically.